

<p align="center">11 FLUORESCENCE DETECTION</p>	<p align="center">Page 1 of 4</p>
<p align="center">TRAINING PROGRAM FOR THE ANALYSIS OF FORENSIC CASEWORK USING PCR-BASED STR FLUORESCENCE IMAGING ANALYSIS AT THE POWERPLEX® 16 BIO LOCI</p>	<p align="center">Issue No. 2</p>
	<p>Effective Date: 1-August-2005</p>
<p>11 FLUORESCENCE DETECTION</p> <p>11.1 GOALS:</p> <p>11.1.1 To become familiar with the use of fluorescence as it applies to the detection of amplified DNA, including the fluorescent dyes and wavelengths used for detection of the PowerPlex® 16 BIO loci.</p> <p>11.1.2 To develop an understanding and working knowledge of fluorescence detection using the FMBIO Fluorescent Image Analysis System (Hitachi/MiraiBio), including the limitations.</p> <p>11.1.3 To develop a thorough understanding of how the FMBIO II/FMBIO III Plus Fluorescent Image Analysis System works.</p> <p>11.2 TASKS:</p> <p>11.2.1 Scan electrophoresis gels using the FMBIO Fluorescent Image Analysis System. Refer to the <u>Commonwealth of Virginia Department of Forensic Science Forensic Biology Section Procedure Manual, Section III - Fluorescent Detection PCR-Based STR DNA Protocol: PowerPlex® 16 BIO System</u> for the procedure.</p> <p>11.2.2 Read applicable literature and become familiar with glossary terms. Refer to Appendices A, B, and C.</p> <p>11.2.3 Continue on to Chapter 12, INTERPRETATION.</p> <p>11.3 TRAINING EVALUATION:</p> <p>11.3.1 Knowledge</p> <p>11.3.1.1 Review of notes and other documentation in training notebook by training coordinator.</p> <p>11.3.1.2 Mini-mock trials and/or question and answer sessions.</p> <p>11.3.2 Skills</p> <p>11.3.2.1 The trainee should demonstrate a thorough understanding of the FMBIO and the software used for the analysis of the PowerPlex® 16 BIO typing gels. This will be monitored by review of the documentation in the training notebook and continual observation by the training coordinator.</p> <p>11.3.3 Completion of the trainee checklist by the training coordinator.</p>	

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<p>STUDY QUESTIONS:</p> <ol style="list-style-type: none"> 1. Explain fluorescence detection. 2. How does the FMBIO II/FMBIO III Plus Fluorescent Image Analysis System work? 2. What is the purpose of the different filters used with the FMBIO II/FMBIO III Plus? 3. During the gray level adjustment stage of the scanned image, why is it necessary for the examiner to switch the display mode under “Multi” to “Overlay”? 4. What filter is used to detect the fluorescent dye Texas Red® - X and on which channel can it be detected? Rhodamine Red™? JOE? Fluorescein? 5. When the color/blended image is created for a PowerPlex® 16 BIO System gel, the “Color Chooser” button on the Project Box is what color for channel 1, channel 2, channel 3, and channel 4? 	

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CHECKLIST FOR FLUORESCENCE DETECTION-POWERPLEX® 16 BIO

Name of Trainee: _____

- Trainee has successfully scanned electrophoresis gels using the FMBIO II /FMBIO III Plus Fluorescent Image Analysis System.

Date:_____ Training Coordinator:_____

Comments:_____
- Trainee has successfully sized the typing gels using the STaRCall software.

Date:_____ Training Coordinator:_____

Comments:_____
- Trainee understands the purpose of each of the work sheets generated using the STaRCall software.

Date:_____ Training Coordinator:_____

Comments:_____
- Trainee has developed an understanding of the theory and operation of the FMBIO II/FMBIO III Plus Fluorescent Image Analysis System.

Date:_____ Training Coordinator:_____

Comments:_____
- Notebook is organized and complete.

Date:_____ Training Coordinator:_____

Comments:_____
- Trainee has read and understands all applicable literature.

Date:_____ Training Coordinator:_____

Comments:_____

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<p>7. Trainee has participated in mini-mock trials and/or question and answer sessions.</p> <p>Date:_____ Training Coordinator:_____</p> <p>Comments:_____</p> <p style="text-align: right;">◆END</p>	